

TENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 February 2000 (04.02.00)	
International application No. PCT/FI99/00424	Applicant's or agent's file reference 8D15PC
International filing date (day/month/year) 17 May 1999 (17.05.99)	Priority date (day/month/year) 18 May 1998 (18.05.98)
Applicant LIPSANEN, Mikko et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

15 December 1999 (15.12.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

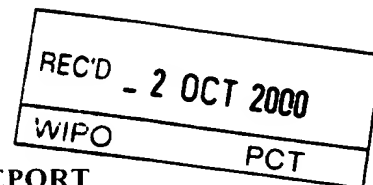
made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer R. E. Stoffel Telephone No.: (41-22) 338.83.38
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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 8D15PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI99/00424	International filing date (day month year) 17.05.1999	Priority date (day month year) 18.05.1998
International Patent Classification (IPC) or national classification and IPC7 H04M 15/00, H04Q 7/38		
Applicant Telefonaktiebolaget L M Ericsson (publ) et al		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 15.12.1999	Date of completion of this report 20-09-2000
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5085 S-100 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Stefan Hermanson/js Telephone No. 08-782 25 00

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI99/00424

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

- ☒ the international application as originally filed.
- ☐ the description. pages _____, as originally filed.
 pages _____, filed with the demand.
 pages _____, filed with the letter of _____.
 pages _____, filed with the letter of _____.
- ☐ the claims, Nos. _____, as originally filed.
 Nos. _____, as amended under Article 19.
 Nos. _____, filed with the demand.
 Nos. _____, filed with the letter of _____.
 Nos. _____, filed with the letter of _____.
- ☐ the drawings, sheets/fig _____, as originally filed.
 sheets/fig _____, filed with the demand.
 sheets/fig _____, filed with the letter of _____.
 sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

- ☐ the description. pages _____
- ☐ the claims. Nos. _____
- ☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI99/00424

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-9</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-9</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-9</u>	YES
	Claims		NO

2. Citations and explanations

The claimed invention relates to a method of providing information relating to a telephone call to a data storage system. Caller identity information is received at an exchange during a call set-up procedure and an incoming call alert message is transmitted to a called device. A Call Data Record containing at least the received caller identity information is outputted to a data storage system prior to or in direct response to a reception of a call answer message.

Document cited in the International Search Report:

D1: US 5 712 908 A
D2: US 5 396 548 A
D3: WO 95 22230 A2
D4: US 5 506 893 A

D1 relates to an apparatus and method for generating call duration billing records utilising ISUP messages in a CCS/SS7 telecommunications network. An elapsed time calculator computes elapsed time of the particular call according to the difference in the start and end times of the call, using time-stamps associated with the correlated call set-up and terminating MSUs. A record generator generates a call duration billing record for the call from the correlated MSUs to create an elapsed time billing record.

D2 discloses a communications system that detects special service information (calling party identification) during a silent interval between ringing signals on an incoming call and stores the information in a call record created for the call.

... /...

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI99/00424

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box V

D3 relates to a method and apparatus for identifying call records.

D4 discloses a telecommunication network arrangement for providing real time access to call records.

The claimed invention differs from the prior art. D1 discloses a method of generating call duration billing records. A billing record containing information such as time of off-hook, calling number and called number is established in the local exchange of the calling subscriber (see col. 6, lines 59-61). The message utilised to begin timing a call may be an Address Complete Message, an Answer Message or an Exit Message (see col. 3, lines 62-65). D1 does however not reveal a method where a Call Data Record containing information such as caller line identity is transmitted to a data storage system prior to, or in direct response to receipt of a call answer message. This difference is considered to involve an inventive step. D2-D4 disclose the general state of the art.

In conclusion, with reference to the cited prior art, the invention as claimed in claims 1-9 is novel and is considered to involve an inventive step. The invention claimed in claims 1-9 is considered to have industrial applicability.

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

8D15PC

Box No. I TITLE OF INVENTION

CALL INFORMATION OUTPUT IN A TELECOMMUNICATION NETWORK

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

TELEFONAKTIEBOLAGET L M ERICSSON (publ)
S-126 25 Stockholm
Sweden

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

SE

State (that is, country) of residence:

SE

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

LIPSANEN, Mikko
Harakkamäentie 59 B
FIN-21380 Aura
Finland

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked do not fill in below.)

State (that is, country) of nationality:

FI

State (that is, country) of residence:

FI

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE: OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Borenus & Co Oy Ab
Kansakoulukuja 3
FIN-00100 Helsinki
Finland

Telephone No.

+358-9-6866840

Facsimile No.

+358-9-68668444

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NILSSON, Patrik, Kim
Kellonsoittajankatu 8 B 9
FIN-20500 Turku
Finland

This person is:

☐ applicant only☒ applicant and inventor☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

FI

State (that is, country) of residence:

FI

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☒ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

PALM, Patrik, Kjell-Johan
Starrängsringen 42
S-11550 Stockholm
Sweden

This person is:

☐ applicant only☒ applicant and inventor☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

SE

State (that is, country) of residence:

SE

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☒ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only☐ applicant and inventor☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only☐ applicant and inventor☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | <input checked="" type="checkbox"/> AE United Arab Emirates |
| <input checked="" type="checkbox"/> LK Sri Lanka | <input checked="" type="checkbox"/> ZA Republic of South Africa |
| <input checked="" type="checkbox"/> LR Liberia | <input type="checkbox"/> |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

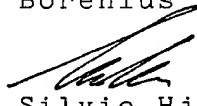
Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) (18.05.98) 18 May 1998	981105	FI		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY			
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):	
ISA / SE		Date (day/month/year)	Number Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING	
This international application contains the following number of sheets: request : 4 description (excluding sequence listing part) : 8 claims : 3 abstract : 1 drawings : 2 sequence listing part of description : Total number of sheets : 18	This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input checked="" type="checkbox"/> priority document(s) identified in Box No. VI as item(s): FI 981105 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):
Figure of the drawings which should accompany the abstract: 1	Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).	
Borenus & Co Oy Ab  Silvio Hjelt Patent Agent	

For receiving Office use only	
1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	
6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only
Date of receipt of the record copy by the international Bureau:

The demand must be filed directly with the competent International Preliminary Examining Authority. If two or more Authorities are competent, with the one chosen by the applicant. The name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ SE

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference 8D15PC
International application No. PCT/FI99/00424	International filing date (day/month/year) 17 May 1999 (17.05.99)	(Earliest) Priority date (day/month/year) 18 May 1998 (18.05.98)
Title of invention CALL INFORMATION OUTPUT IN A TELECOMMUNICATION NETWORK		
Box No. II APPLICANT(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) TELEFONAKTIEBOLAGET L M ERICSSON (publ) et al S-126 25 Stockholm Sweden		Telephone No.: Facsimile No.: Teleprinter No.:
State (that is, country) of nationality: SE	State (that is, country) of residence: SE	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) LIPSANEN, Mikko Harakkamäentie 59 B FIN-21380 Aura Finland		
State (that is, country) of nationality: FIN	State (that is, country) of residence: FIN	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) NILSSON, Patrik, Kim Kellonsoittajankatu 8 B 9 FIN-20500 Turku Finland		
State (that is, country) of nationality: FIN	State (that is, country) of residence: FIN	
<input checked="" type="checkbox"/> Further applicants are indicated on a continuation sheet.		

Continuation of Box No. II APPLICANT(S)

If none of the following sub-boxes is used, this sheet should not be included in the demand.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

PALM, Patrik, Kjell-Johan
Starrängsringen 42
S-115 50 Stockholm
Sweden

State (that is, country) of nationality:
SE

State (that is, country) of residence:
SE

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

☐

Further applicants are indicated on another continuation sheet.

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*Borenus & Co Oy Ab
Kansakoulukuja 3
FIN-00100 Helsinki
Finland

Telephone No.:

+358 9 686 684 0

Facsimile No.:

+358 9 686 684 44

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☒ as originally filed☐ as amended under Article 34

the claims

☒ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34

the drawings

☒ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
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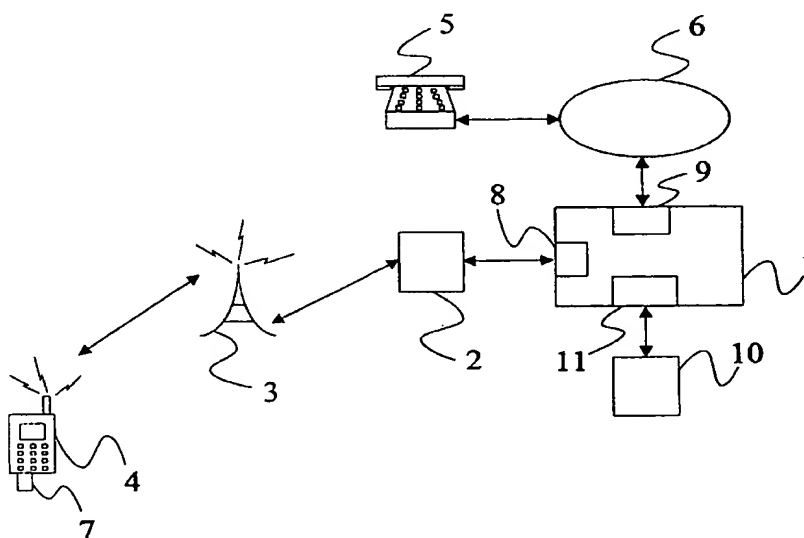
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(54) Title: CALL INFORMATION OUTPUT IN A TELECOMMUNICATION NETWORK



(57) Abstract

A method of providing information relating to a telephone call, in a GSM cellular radio telephone network, to a data storage system (10). The method comprises receiving caller identity information at a Mobile Switching Centre (1) of the network during a call set-up procedure between a mobile station (4) and the MSC (1) and storing the information at least temporarily at the MSC (1). An incoming call alert message is sent by the MSC (1) to a called device (5). In the event that the called device (5) answers or otherwise accepts the incoming call alert, a call answer message is sent to the MSC (1). In response to receipt of the call answer message, at least the received and stored caller identity information is output from the MSC (1) to the data storage system (10).

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CALL INFORMATION OUTPUT IN A TELECOMMUNICATION NETWORK

Field of the Invention

5 The present invention relates to a method and apparatus for outputting call information in a telecommunication network.

Background to the Invention

10

In telecommunication networks such as fixed access networks and cellular radio telephone networks there is usually a need to record call information at at least one exchange of the network. This information may
15 include the identity of a caller (A-number), the identity of the called party (B-number), and the duration of a call. In cellular radio telephone networks, the recorded information may also include the International Mobile Subscriber Identity (IMSI) code of
20 the Subscriber Identity Module (SIM) used with the calling mobile telephone, and the International Mobile Equipment Identity (IMEI) code of the calling telephone itself. Both the IMSI and IMEI codes are typically sent by a mobile telephone to the cellular network during a
25 call set-up phase. For a given call, a record stored in an exchange is normally output to a centralised billing system of the network upon termination of the call. Historically, this record has been referred to as a "Toll Ticket" (TT) although more recently the term "Call
30 Data Record" (CDR) has been used.

US5,506,893 describes a telecommunication network in which a CDR is output from a switching centre to an external billing system upon termination of a call.

35

Summary of the Invention

According to a first aspect of the present invention there is provided a method of providing information relating to a telecommunication call, in a telecommunication network, to a data storage system, the method comprising:

receiving caller identity information at an exchange of the network during a call set-up procedure between a calling device and the exchange, and storing the information at least temporarily at the exchange;

sending an incoming call alert message to a called device;

prior to receiving a call answer message at the exchange, or in direct response to receipt of a call answer message, outputting from the exchange to said data storage system a Call Data Record containing at least the received caller identity information.

Embodiments of the present invention provide for the output of call information at a very early stage in a call, i.e. immediately following the answering of the call or during the call set-up phase. This makes possible, for example, real-time billing and fraud detection prior to or during a call.

In certain embodiments of the present invention, the telecommunication network comprises a cellular radio telephone network and the call is made from a cellular radio telephone device. The exchange from which the call information is output is then the Mobile Switching Centre (MSC). The information may include at least one of the subscriber telephone number, IMEI code, IMSI code, or B-number.

In other embodiments of the present invention, the telecommunication network comprises a fixed access

network in which telephone device is coupled to the exchange via land lines. The information output by the exchange preferably includes the caller's telephone number (A-number) and the called number (B-number).

5

According to a second aspect of the present invention there is provided apparatus for providing information relating to a telecommunication call, in a telecommunication network, to a data storage system, the apparatus comprising:

10

first receiving means for receiving caller identity information at an exchange of the network during a call set-up procedure between a calling device and the exchange, and for storing the information at least temporarily at the exchange;

15

transmitting means for transmitting an incoming call alert message to a called device;

second receiving means for receiving, in the event that the called device answers or otherwise accepts the incoming call alert, a call answer message sent to the exchange; and

20

output means for outputting, prior to, or in response to, receipt of said call answer message, from the exchange to said data storage system, a Call Data Record containing at least the received caller identity information.

25

Preferably, said first and second receiving means, said transmitting means, and said output means are provided as an integral part of the network exchange. Where the network comprises a cellular radio telephone network, the exchange is a Mobile Switching Centre (MSC). The MSC may be contained within a housing which is physically spaced apart from an external billing system which is arranged to receive the Call Data Record output by the MSC. More preferably, a plurality of MSCs are

30

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arranged to provide the output CDRs to a common external billing system.

According to a third aspect of the present invention
5 there is provided a telecommunication network having a plurality of interconnected exchanges for routing calls in the network, and a common billing system coupled to each of said exchanges, each exchange comprising:

10 first receiving means for receiving caller identity information during a call set-up procedure between a calling device and the exchange, and for storing the information at least temporarily at the exchange;

transmitting means for transmitting an incoming call alert message to a called device or to a called
15 device via one or more further exchanges;

second receiving means for receiving, in the event that the called device answers or otherwise accepts the incoming call alert, a call answer message sent to the exchange; and

20 output means for outputting, prior to or in response to receipt of said call answer message, from the exchange to a data storage system, a Call Data Record containing at least the received caller identity information.

25

Brief Description of the Drawings

For a better understanding of the present invention and in order to show how the same may be carried into effect
30 reference will now be made, by way of example, to the accompanying drawings, in which:

Figure 1 shows schematically a telecommunication network including a cellular radio telephone network;

35 Figure 2 is a flow diagram illustrating the method of operation of the telecommunication network of Figure 1; and

Figure 3 illustrates an external billing system shared by a number of Mobile Switching Centres of a cellular radio telephone network.

5 Detailed Description of Embodiments

There is shown in Figure 1 a telecommunication network comprising a Global System for Mobile Communications (GSM) cellular radio telephone network and a fixed
10 access network. The former consists of a Mobile Switching Centre (MSC) 1, a set of Base Station Controllers (BSC) 2 only one of which is shown in Figure 1, and a set of Base Transceiver Stations (BTS) 3 again only one of which is shown in the Figure. The MSC,
15 BSCs, and BTSs provide functionality as defined in the relevant European Telecommunications Standards Institute (ETSI) GSM standards.

In the GSM network, mobile stations such as that
20 indicated by reference numeral 4 communicate with a BTS 3 over the air interface. User data and signaling messages are coupled between the BTS 3 and the MSC 1 via the BSC 2. The MSC 1 acts as an exchange of the GSM network, routing calls between a mobile station 4 and a
25 called, or calling, station.

In the example of Figure 1, the destination of a call from the mobile station 4 is a land line telephone 5 which belongs to a subscriber of a fixed access network
30 6. A call may be routed through several intermediate exchanges (e.g. in the case of an international call) and may also pass through several exchanges of the fixed access network, although for the sake of clarity these exchanges are not shown in Figure 1. In the same way,
35 it will be appreciated that a call may be routed through several MSCs 1 en route from the mobile station 4 to the fixed line telephone 5.

The mobile station 4 is provided with a Subscriber Identity Module (SIM) 7 which contains a solid state memory arranged to store a unique International Mobile Subscriber Identity (IMSI) code. The mobile station 4 itself has a solid state memory arranged to store a second unique code known as an International Mobile Equipment Identity (IMEI) code. The form of these two codes is defined in the relevant GSM standard.

10

When a user of the mobile terminal 4 places a call to the fixed line telephone 5 by dialing the B-number of that telephone, at least the IMSI code and the telephone number (A-number) assigned to the mobile terminal 4 are transmitted to an input/output device 8 of the MSC 1 on a signaling channel of the GSM network (the IMEI code may or may not be sent at this stage). In response to the call request, the MSC 1 first verifies the right of the mobile terminal 4 to use the services of the GSM network on the basis of the A-number and the IMSI code (e.g. using a database of subscribers of the GSM network).

15

20

Assuming that the mobile terminal 4 receives authorisation from the MSC 1 to place the call, the MSC 1 transmits an incoming call request from an output/output device 9 to the fixed line telephone 5 via the fixed access telephone network. A signaling protocol such as the Signaling System 7 (SS7) is used to relay the request between the MSC 1 and the various exchanges. When the request reaches the fixed line telephone 5, the phone rings in the normal manner.

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If the call is answered at the fixed line telephone 5, then a call answer message is returned to the fixed access network 6, either by the telephone 5 or by some intermediate device, e.g. a concentrator. The call

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answer message is also transmitted back to the input/output device 9 of the MSC 1 of the GSM network, again using the SS7 signaling protocol.

5 Connected to the MSC 1 of the GSM network is a so-called input/output group device or external billing system 10. This may be a personal computer (PC), work station, data storage device or the like, which logs information concerning calls switched by the MSC 1. The information
10 recorded by the external billing system 10 enables the operator of the GSM network to charge subscribers, trace calls, and identify calls made from "illegal" equipment. The latter is achieved using the transmitted IMSI code and also the IMEI code (if transmitted).

15 When the call answer message is received by the MSC 1 from the fixed line telephone 5, the MSC 1 provides a traffic channel (i.e. voice or data) to the mobile station 4 enabling the mobile subscriber to communicate
20 with the fixed line telephone. In addition, receipt of the call answer message causes the MSC 1 to output to the external billing system 10, via an input/output device 11, the caller's A-number, IMSI code, the called party's B-number, and the call start time. This data is
25 in the form of a partial Charging Data Record (CDR) and is recorded by the external billing system 10. When the call is terminated by one of the parties to the call hanging-up, a call termination message is received by the MSC, and a call end time output to the input/output
30 group device 10 to complete the partial CDR.

Figure 2 is a flow chart illustrating the method of operation of the network of Figure 1, and relates in particular to the output of the CDR to the external
35 billing system 10.

The external billing system is physically separate from the MSC (1) which is usually contained within a single large housing. By transferring the partial CDR, upon receipt of the call answer message from the B-subscriber, to the external billing system the network operator is able to access the record at an early stage in a call for the purposes already set out above.

The external billing system is typically shared by a number of MSCs 1 of the GSM network. This is illustrated in Figure 3.

It will be appreciated by the person of skill in the art that various modifications may be made to the above described embodiment without departing from the scope of the present invention. For example, the exchange from which the CDR is output may be an exchange of a fixed access network rather than that of a cellular radio telephone network. In another modification, the partial CDR is output from the exchange to the external billing system during the call set-up phase, i.e. prior to the call answer message being received at the exchange from the B-subscriber. The CDR provided to the external billing system may include additional information such as the MSC identity, and the originating/terminating cell identity (Cell Global Identity) in the GSM network.

Claims

1. A method of providing information relating to a telecommunication call, in a telecommunication network, to a data storage system, the method comprising:
- 5 receiving caller identity information at an exchange of the network during a call set-up procedure between a calling device and the exchange, and storing the information at least temporarily at the exchange;
- 10 sending an incoming call alert message to a called device;
- prior to receiving a call answer message at the exchange, or in direct response to receipt of a call answer message, outputting from the exchange to said
- 15 data storage system a Call Data Record containing at least the received and stored caller identity information.
2. A method according to claim 1, wherein the
- 20 telecommunication network comprises a cellular radio telephone network and the call is made from a cellular radio telephone device.
3. A method according to claim 2, wherein the cellular
- 25 radio telephone network is a GSM network and said exchange from which the Call Data Record is output is a Mobile Switching Center, the method comprising outputting from the Mobile Switching Center at least one of the subscriber telephone number, IMEI code, or IMSI
- 30 code.
4. A method according to claim 1, wherein the telecommunication network comprises a fixed access network in which telephone device is coupled to the
- 35 exchange via land lines, the method comprising outputting from the exchange at least the caller's telephone number (A-number).

5. A method according to any one of the preceding claims and comprising outputting said call data record to an external billing system.

5

6. Apparatus for providing information relating to a telecommunication call, in a telecommunication network, to a data storage system (10), the apparatus comprising:

first receiving means (8) for receiving caller
10 identity information at an exchange (1) of the network during a call set-up procedure between a calling device (4) and the exchange (1), and for storing the information at least temporarily at the exchange (1);

transmitting means (9) for transmitting an incoming
15 call alert message to a called device (5);

second receiving means (9) for receiving, in the event that the called device (5) answers or otherwise accepts the incoming call alert, a call answer message sent to the exchange (1); and

20 output means (11) for outputting, prior to or in response to receipt of said call answer message, from the exchange (1) to said data storage system (10), a Call Data Record containing at least the received and stored caller identity information.

25

7. Apparatus according to claim 6, wherein said first and second receiving means (8,9), said transmitting means (9), and said output means (11) are provided as an integral part of the network exchange (1), and said data
30 storage system (10) is physically separate from the exchange (1).

8. Apparatus according to claim 6 or 7, the network comprising a cellular radio telephone network and said
35 exchange (1) being a Mobile Switching Centre (MSC) of the cellular network.

9. A telecommunication network having a plurality of interconnected exchanges for routing calls in the network, and a billing system coupled to each of said
5 exchanges, each exchange comprising:

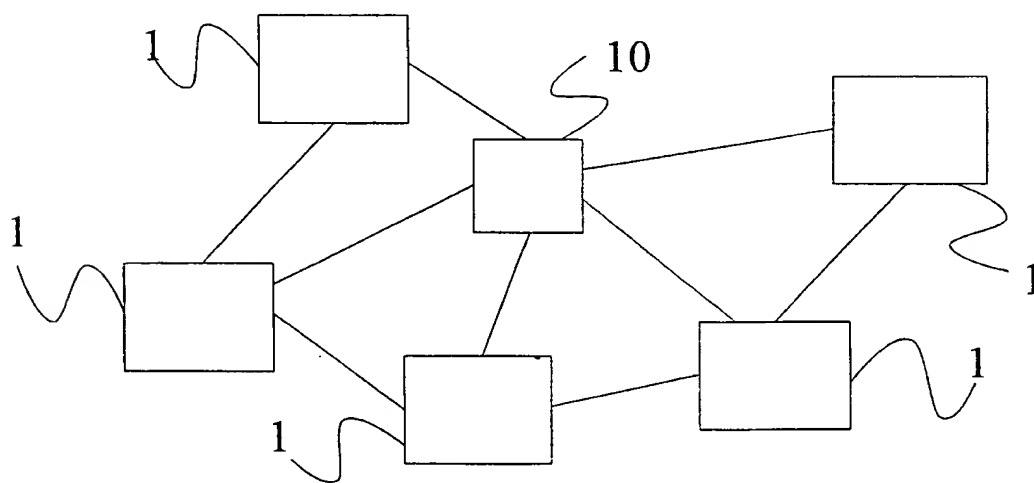
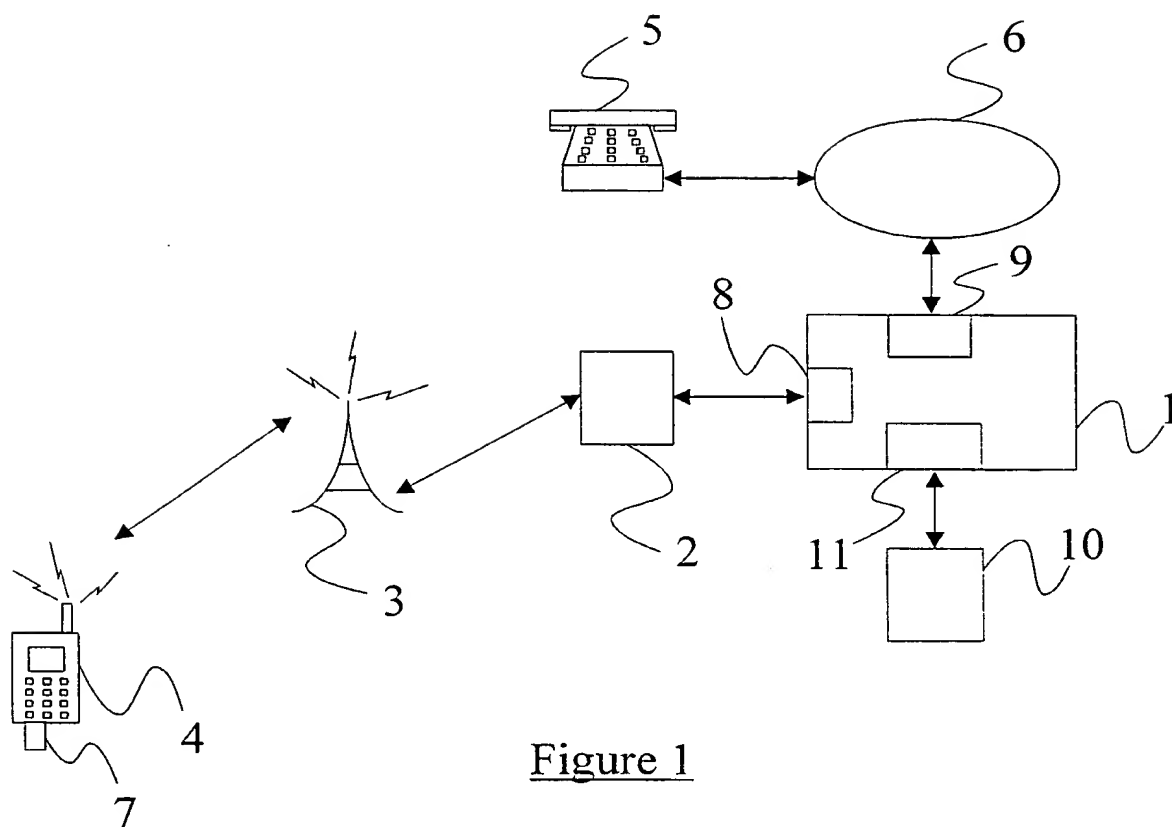
first receiving means (8) for receiving caller identity information during a call set-up procedure between a calling device (4) and the exchange (1), and for storing the information at least temporarily at the
10 exchange (1);

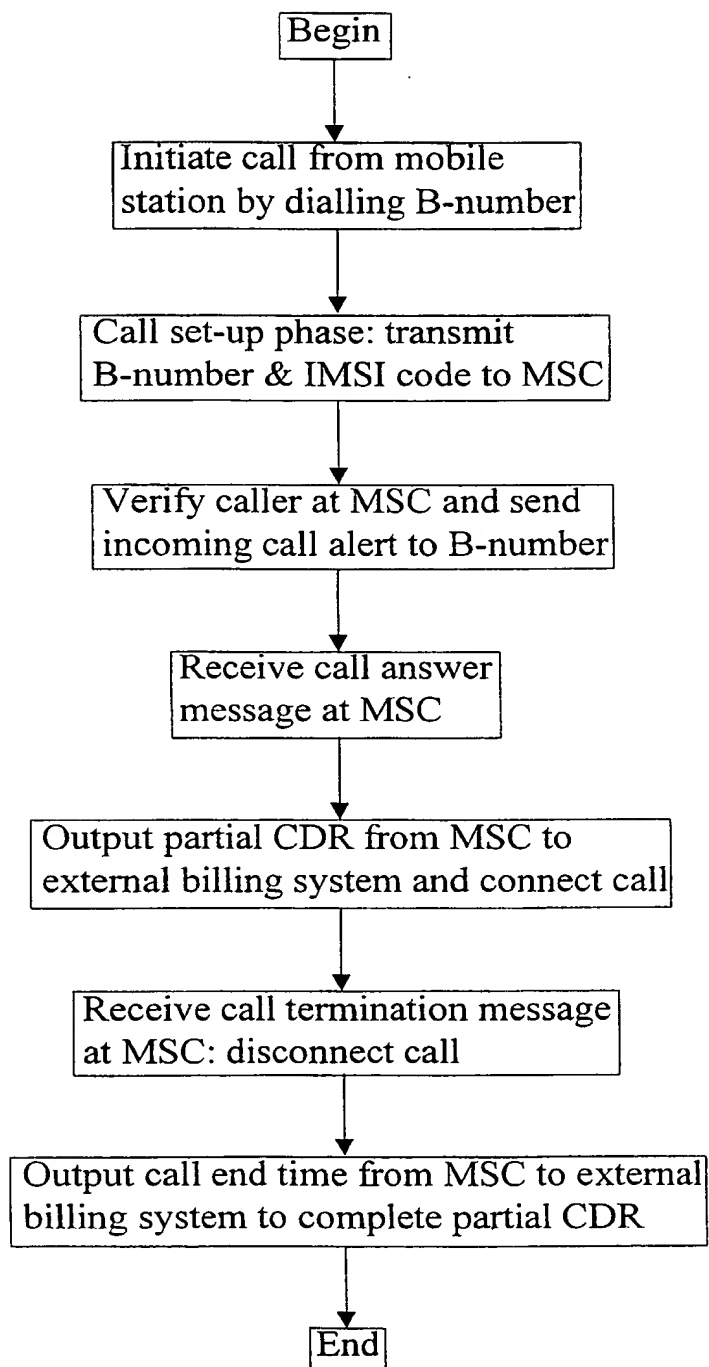
transmitting means (9) for transmitting an incoming call alert message to a called device (5) or to a called device (5) via one or more further exchanges (1);

second receiving means (9) for receiving, in the
15 event that the called device (5) answers or otherwise accepts the incoming call alert, a call answer message sent to the exchange (1); and

output means (11) for outputting, prior to or in response to receipt of said call answer message, from
20 the exchange (1) to a data storage system (10), a Call Data Record containing at least the received and stored caller identity information.

1/2



Figure 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 99/00424

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 15/00, H04Q 7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIL, EDOC, JAPIO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5712908 A (ANTHONY J. BRINKMAN ET AL), 27 January 1998 (27.01.98), column 6, line 57 - column 7, line 8, abstract --	1-9
X	US 5396548 A (JEANNE P. BAYERL ET AL), 7 March 1995 (07.03.95), column 3, line 53 - column 4, line 2, abstract --	1-9
A	WO 9522230 A2 (TELEFONAKTIEBOLAGET LM ERICSSON), 17 August 1995 (17.08.95) --	2,3,8
A	US 5506893 A (THOMAS H. BUSCHER ET AL), 9 April 1996 (09.04.96), cited in the application --	1-9

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Information on patent family members

28/09/99

International application No.

PCT/FI 99/00424

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5712908	A	27/01/98	NONE	
US	5396548	A	07/03/95	NONE	
WO	9522230	A2	17/08/95	AU 679841 B	10/07/97
				AU 1721795 A	29/08/95
				CN 1124556 A	12/06/96
				DE 69509828 D	00/00/00
				EP 0692174 A,B	17/01/96
				SE 0692174 T3	
				EP 0895398 A	03/02/99
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US	5506893	A	09/04/96	NONE	